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## **Review of Ressler "Thoroughly Relativistic Perspectives"**

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Ressler, Mark

Thoroughly relativistic perspectives. *Notre Dame J. Form. Log.* **53**(2012), no. 1, 89–112.

This article contains a formal analysis of the philosophical thesis of relativism. According to relativism, truth must not always be absolute but may be relative to some perspective(s); thorough relativism is the radical thesis that no truth is absolute but always depends on some perspective(s). The article provides five “relative systems” (= formal languages plus semantic interpretations) RL1, RL2, ..., RL5 in which it is possible to classify truths as either relative or absolute. In its second part it investigates the often raised objection against thorough relativism that it is inconsistent and self-refuting.

The five systems presented by Ressler are based on two propositional languages which may be conceived as languages of modal logic without the standard propositional connectives (negation, conjunction, etc.). Both languages have an infinite stock of sentence letters:  $s_1, s_2, \dots$ . The first language has only two modalities  $\text{REL}()$  and  $\text{ABS}()$ .  $\text{REL}(\alpha)$  means that the truth-value of  $\alpha$  is perspective-dependent while  $\text{ABS}(\alpha)$  says that  $\alpha$  is absolute. The second language resembles the language of multimodal logic by replacing the single pair of modalities by a whole (finite) family of pairwise related operators  $\text{REL}_1()$ ,  $\text{ABS}_1$ ,  $\text{REL}_2()$ ,  $\text{ABS}_2$ , ...,  $\text{REL}_n()$ ,  $\text{ABS}_n()$  in order to distinguish between different kinds of perspective dependencies. In both languages there are no other well-formed formulas besides the sentence letters and the expressions built up from the operators just listed.

The basic idea for the semantics of the systems RL1, ..., RL5 is borrowed from modal logic, cf. also the related work of Steven D. Hales (MR1438989). Each pair of corresponding operators  $\text{REL}_k()$  and  $\text{ABS}_k()$  is interpreted by means of a binary relation  $R_k$  which is defined on a set of perspectives  $M_k$ . A well-formed formula  $\text{REL}_k(\alpha)$  is true under the perspective  $p \in M_k$  iff there are two perspectives  $q', q'' \in M_k$  which are both  $R_k$ -accessible from  $p$  and  $\alpha$  receives different truth-values under  $q'$  and  $q''$ .  $\text{ABS}_k(\alpha)$ , on the other hand, is true under  $p \in M_k$  iff the truth-values of  $\alpha$  at, respectively,  $q'$  and  $q''$  coincide for all  $q', q'' \in M_k$  with both  $pR_kq'$  and  $pR_kq''$ .

Whereas RL1 (formulated in the first language) works out this idea for the single pair  $\text{REL}()$  and  $\text{ABS}()$ , RL2 (formulated in the second language) incorporates a multiplicity of such modalities. RL3 returns to a single pair of modalities but formulas are evaluated with respect to pairs of perspectives  $\langle p_1, p_2 \rangle$ . Furthermore, there is a function which selects for each perspective  $p$  a corresponding accessibility relation  $R_p$ . Now, if  $\text{REL}(\alpha)$  is evaluated at the pair  $\langle p_1, p_2 \rangle$ , the first co-ordinate selects the accessibility relation  $R_{p_1}$  which then together with the second co-ordinate  $p_2$  is used to evaluate the formula according to the scheme used in RL1. Hence  $\text{REL}(\alpha)$  is true in  $\langle p_1, p_2 \rangle$  iff there are perspectives  $q', q''$  such that both  $p_2R_{p_1}q'$  and  $p_2R_{p_1}q''$  and  $\alpha$  has different truth-values at these two perspectives. The truth condition for the modality  $\text{ABS}_k()$  results from a similar modification of the corresponding clause for RL1. RL4 combines the double indexing technique of RL3 with the multimodal approach of RL2. RL5, finally, is a system which adds “non-normal” perspectives to RL1 in a way similar to the addition of non-normal worlds to the Kripke-semantics of modal systems.

In the second part of the article it is shown that there is a model  $\mathcal{M}$  for RL1 with a perspective  $p$  such that for all well-formed formulas  $\alpha$  it is true at  $p$  that  $\text{REL}(\alpha)$ . Hence, all truth is relative under that perspective. Furthermore, it is shown how  $\mathcal{M}$  can be modified in order to achieve corresponding models for RL2, ..., RL5 such that the result for RL1 can be extended to the other systems. However, according to Ressler, this does not yet show that thorough reletivism is not self-refuting since one may argue that the assignment of truth-value to formulas with respect to perspectives is itself absolute rather than relative. In order to investigate this objection, the two languages considered are extended in a way which is reminiscent of hybrid logic; cf., e.g., Patrick Blackburn's "hybrid logic manifesto" (MR1768949). "Nominals"  $a_1, a_2, \dots$  are introduced which refer to perspectives and a binary operator  $\text{FOR}_x()$  (corresponding to the @-operator of hybrid logic) is added. Intuitively,  $\text{FOR}_x(\alpha)$  means that  $\alpha$  is true at the perspective referred to by " $x$ ". The above mentioned objection against relativism would be that formulas  $\text{ABS}(\text{FOR}_x(\alpha))$  always have a definite true-value. This is called the "For- $x$ -objection" by Ressler.

The semantic clause for the newly introduced operator (in RL1) is as follows:  $\text{FOR}_x(\alpha)$  is true under perspective  $p$  iff  $x$  denotes a certain perspective  $p'$  which is accessible to  $p$  and  $\alpha$  is true at  $p'$ . Ressler sketches the construction of an RL1 model in which the For- $x$ -objection does not hold when restricted to true formulas. It is remarkable, however, that the situation is quite otherwise for false formulas: Let  $\alpha$  be false under perspective  $p'$  and let the nominal  $x$  refer to that perspective. Then, as Ressler shows,  $\text{REL}(\text{FOR}_x(\alpha))$  is false (in the extension of RL1 by the  $\text{FOR}_x()$  operator) under all perspectives. Again this result can be extended to RL2, RL3, and RL4. If, however, in RL5 the above cited semantic clause for the FOR-operator is restricted to normal perspectives whereas the assignment of truth-values under non-normal perspectives to FOR-formulas is arbitrary, then thorough relativism applies to all kind of formulas. Ressler concludes that thorough relativism is thus not normal rather than self-refuting.

Reviewed by Klaus Robering